

home have roughly double the exposure in high smoking communities than in low smoking ones.

In conclusion, our data emphasise the value of measuring cotinine in the saliva as a simple non-invasive marker of passive exposure to tobacco smoke. Maternal smoking had a greater effect than paternal smoking on cotinine concentration despite its lower prevalence. However, 7-11% of the population burden of cotinine was in children not exposed to any of the sources we asked about. The correlation between cotinine concentrations in such children and the prevalence of smoking in the community suggests that passive smoking should be viewed as a community exposure rather than simply as an aspect of family lifestyle.

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Post-traumatic stress disorder in children after television programmes

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described as a sensitive child and a worrier. He was admitted to the hospital's child and family unit as his mother could no longer cope with his behaviour at home. A behavioural programme was established: he began to keep a diary of flashbacks; his mother was helped to regain control in their relationship; and both were discouraged from discussing ghosts and his fears. On discharge eight weeks later he was happier and confident and free of symptoms.

CASE 2

Immediately after watching *Ghostwatch* this child, also described as a worrier, had complained of being frightened. He had felt sick, and cried easily, and refused to go into his bedroom, complaining of someone watching him there. He was consequently allowed to sleep in his parents' room, where he talked excessively about his fears; his parents were drawn into a discussion and had to reassure him repeatedly throughout the night.

He was seen in the outpatient clinic. A behavioural programme was established, whereby he was encouraged to sleep in his own room with brief comforting when afraid and to ignore any discussion about the programme. After three appointments at weekly intervals, with telephone conversations in between, the situation had improved: he was sleeping in his own room and the whole family seemed more relaxed.

Comment

Post-traumatic stress disorder was diagnosed in our two patients on the basis of the criteria in the ICD-10 and DSM-III-R. The symptoms also corresponded to those described by Yule and Edwin³: sleep disturbances with problems settling down to sleep; waking at night; nightmares; fear of the dark and of sleeping alone; difficulties in concentrating; impaired memory; persistent intrusive thoughts and images of the traumatic event; raised levels of anxiety; panic attacks; separation anxiety and clinging behaviour; and depressed mood and irritability. The trauma in our two

Post-traumatic stress disorder in children is now well documented,¹ although as recently as 1985 Garmez and Rutter argued against the need for a diagnostic category, particularly as amnesia, psychic numbing, and intrusive flashbacks had not been reported in child survivors of disasters.²

On Hallowe'en (31 October) 1992 a programme with the title *Ghostwatch* was shown on television. Four months later two 10 year old boys were referred separately by their general practitioners to the child psychiatry unit at our hospital. Post-traumatic stress disorder was diagnosed, based on the criteria in the *International Classification of Diseases*, tenth revision (ICD-10) and *Diagnostic and Statistical Manual of Mental Disorders*, third edition, revised (DSM-III-R). We report here these two cases.

Case histories

CASE 1

This boy had been frightened by *Ghostwatch* and had refused to watch the ending. He subsequently expressed fear of ghosts, witches, and the dark, constantly talking about them and seeking reassurance. He suffered panic attacks, refused to go upstairs alone, and slept with the bedroom light on. He had nightmares and daytime flashbacks and banged his head to remove thoughts of ghosts. He became increasingly clingy and was reluctant to go to school or to allow his mother to go out without him.

His parents had separated when he was 4 years old, and he had a close relationship with his mother. His early development had been normal, although he was

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cases had been caused by the television programme the boys had watched. Post-traumatic stress disorder due to watching a television programme has not been reported previously, although Saigh reported on an 11 year old girl in Lebanon who developed the disorder after being told of the war related death of her uncle.⁴

The treatment in both our cases specifically addressed the children's preoccupations and anxieties. Behavioural and cognitive strategies including relaxation techniques and the management of anxiety were used, rather than an eclectic approach being taken as McFarlane suggested.⁵ Although both boys had anxiety traits and overdependent relationships, risk

factors for the development of post-traumatic stress disorder in children remain inconclusive.

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Metal residues after cremation

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Cremation takes place in two chambers. The primary chamber is heated to about 700°C; the coffin containing the body is placed inside, and spontaneous combustion occurs. The temperature increases to 900-1100°C during combustion, which lasts 60-90 minutes if the body is obese or up to 120 minutes if the body is thin or cachectic. The remains are raked down into the secondary chamber to cool. After the cooling process any metal is removed and the residue is crushed to the consistency of coarse sand. This residue weighs about 2.0 kg.

Many metal prostheses are implanted in people in Britain: about 40 000 hip replacement operations are performed each year.¹ Seventy per cent of the population is cremated (Federation of British Cremation Authorities, personal communication) and only cardiac pacemakers and radioactive implants are removed beforehand. As a result of the Environmental Protection Act 1990 all implants may soon have to be removed before cremations. I studied the scale of this potential problem and why removal may be necessary.

Methods and results

I sent a standard letter about the disposal of implants to 20 crematoriums in Greater London; I subsequently visited six of these. The staff of five of the crematoriums had collected all implants found after cremation for a short period before my visit; the other crematorium had collected a few unexpected metal implants or ingested objects found over the years. The table shows the data that they supplied. Only one crematorium disposed of implants in the general rubbish, a practice that is contrary to the recommendations of the Federation of British Cremation Authorities.

The most common metal residues were hip and knee replacements. Other implanted items collected

included intramedullary nails, sliding hip screws, and components from hemiarthroplasties. Less commonly retrieved were McLoughlin nail plates, Jewett nail plates, and Enders nails; one Souttar's tube and one triangular fixation device for hip fractures were also retrieved.² At one crematorium a substantial number of coins were found: their presence is probably related to social customs in some ethnic groups. The unexpected items found included a variety of forceps (Spencer-Wells, Jean's, and artery), a pacemaker, a ring cutter, a micrometer, and a pair of Mayo scissors.

Comment

The hazards of cremation have been discussed,³ but little work on metal residues after cremation has been published. A study in 1976 of 6000 cremations found that 5% resulted in metal residues.⁴ In this study 23-76% of cremations resulted in metal residues (table), but this percentage range does not reflect the actual number of bodies with metal residues as one body may have more than one implant. The study shows that implants are common and have increased since 1976.

As a result of the Environmental Protection Act 1990 the temperature for cremation may have to be raised to 1600°C in the primary chamber to reduce emissions of dioxin.⁵ All crematoriums will have to comply by 1996. This act has two implications. Firstly, in all the crematoriums I visited the cremating furnace will have to be replaced because the new higher temperatures would damage the existing ovens. Secondly, and of particular concern to the health service, at 1600°C stainless steel and cobalt-chrome implants will melt; the melting point for stainless steel is 1290°C and for cobalt-chrome 1350°C (Corin Medical, personal communication). This melting would result in damage to the fire bricks, and because of financial constraints in the public sector the costs of repair might have to be met by health authorities. To avoid this, all implants may have to be removed; this would require logging and tracking, which would be a considerable undertaking and would increase demand on pathology services as on average 42% of all bodies would require intervention.

I thank the management and staff of the six crematoriums visited for their help.

Data on implants collected for short period by six crematoriums in 1993

Crematorium	Cremations/year	Maximum temperature (°C)	Collection period (days)	No of implants collected	Estimated proportions* (%) of cremations with implant	Coins present
1	3000	1000	5	31	31/4 (76)	Yes†
2	1000	900	21	20	20/57 (35)	No
3	1500	1000	14	13	13/57 (23)	Yes
4	3500	1100	5	25	25/48 (52)	Yes
5	1800	1000	21	26	26/103 (25)	No
6	3000	1000	NA	NA	NA	No

Crematorium 1 threw out implants; all others buried them.

NA=Not applicable as no collection had been made.

*Calculated from number of cremations a year and one implant came from one body.

†A substantial number were found.

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